
Space Weather Forecast

Issued on Sunday, 04 December 2022 at 01:23 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Daily chance of Moderate flares. Chance G1/Minor Storms, mainly day 4 (7th).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Moderate activity with one brief Moderate flare at 03/1741 UTC from near a new sunspot region that is rotating over the northeast limb. The large sunspot region in the southeast remains a stable and mature spot with a simple magnetic configuration. Most notable growth was observed in a small region in the north disc, just west of centre, which developed a number of small spots. There are currently eight sunspot regions, with the majority of those in the northeast, but generally small and simple. No Earth-directed CMEs (coronal mass ejections) were observed in the last 24 hours.

Solar Wind / Geomagnetic Activity: The solar wind was indicative of declining fast solar winds from a coronal hole. Elevated solar winds gradually eased from around 600km/s to 500 km/s. The total magnetic field was weak, with no significant north-south component observed. Resultant geomagnetic activity was Quiet to Unsettled (Kp 1-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low activity expected, with further Common flares, and a daily chance of isolated Moderate flares.

Solar Wind / Geomagnetic Activity: A slow CME from the 29th Nov may arrive at Earth early on day 1 (4th), however this is low confidence. Ongoing coronal hole sourced fast winds are expected to decline towards background, before the next period of coronal hole sourced fast winds arrive, most likely day 4 (7th). Peak winds of 500-600 km/s likely. Mainly Quiet to Unsettled geomagnetic activity expected through days 1-3 (4th to 6th), although any CME arrival will bring the chance of a spell of Active to G1/Minor Storms day 1 (4th). Activity increasing to Unsettled to Active with a chance of G1/Minor storm intervals day 4 (7th).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to be at background with no solar radiation storms occurring.

Geomagnetic Storms:

Geo-Magnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	20	1	10	40
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	Yes	30	30	30	30
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	2	2	2	2
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm⁻²sr⁻¹s⁻¹)